GEN/ONE

Genlocking Encoder
for Amiga Computers

User's Manual

GEN/ONE

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INTRODUCTION

Thank you for purchasing GEN/ONE for your Amiga computer. We have designed GEN/ONE to be versatile yet easy to use.

We suggest that before you begin, that you complete and return the GEN/ONE Owner Registration card enclosed as soon as possible. This will insure our being able to get in touch with you in case of product updates, including any new manuals or documentation should they become available in the future.

If you have any questions about GEN/ONE or its operation, please don't hesitate to call or drop us a line here at Communications Specialties. Please include the serial number located on the underside of GEN/ONE in any correspondence.

We also welcome your comments and suggestions about GEN/ONE or other video products for the Amiga which you would like to see.

We recommend that you review the DOs and DON'Ts section on page 16 of this manual. This section outlines common things that our customers should either do or not do with their GEN/ONE. This is based on our experience of talking to hundred's of you over the past months. There are many common problems which arise which can be avoided.

INSTALLATION

Okay, let's hook up GEN/ONE and get it fired up.

STEP 1 ..... Connect the power transformer's small mini-phone plug into the connector in the back of GEN/ONE marked:

POWER.

STEP 2 ..... Connect the Computer cable supplied with GEN/ONE as follows:

DB-25 Male end to connector on back of GEN/ONE marked:

INPUT - COMPUTER

DB-23 Female end to connector on Amiga computer marked:

VIDEO or VIDEO PORT or RGB MONITOR

STEP 3 ..... Connect a standard NTSC composite video source, such as from a video camera or VCR to the BNC connector on the back of GEN/ONE marked:

INPUT - VIDEO

Set the switch next to this connector to the **75 ohm** position.

STEP 4 ..... Connect the short DB-9 male to DB-23 male cable, supplied with GEN/ONE, to the connector on the rear panel of GEN/ONE marked:

OUTPUT - MONITOR

This jumper cable will now allow you to connect your existing RGB monitor cable to GEN/ONE. Before purchasing GEN/ONE, this cable was connected to the Amiga where GEN/ONE now connects.

STEP 5 ..... Connect a composite video monitor (not an RGB monitor) or VCR to one of the outputs on the back of GEN/ONE marked:

OUTPUT - VIDEO

Important

It is possible to use the Amiga monitors such as the 1080 and 1084 models as either an RGB or composite video monitor. See the manual for your model for specific composite video connections and operation.

STEP 6 ..... Set the front panel switches on GEN/ONE as follows:

POWER: **OFF**
SYNC SOURCE: **VIDEO**
MODE: **VIDEO**
KEYING: **NORMAL**

STEP 7 ..... Plug the power transformer into a standard 110-120 Vac outlet.

STEP 8 ..... Turn the POWER switch to the **ON** position. The red power indicator will now light.

WHAT YOU SHOULD SEE

Look at you composite video monitor. You will see the incoming video source which you connected to GEN/ONE's video input. If you haven't gotten this far, go back and recheck all the steps.

If you've noticed, we haven't even powered up the Amiga yet. What you see is the incoming video being passed through to the output.

In the next step, we'll explain the operation of GEN/ONE. Leave everything hooked up and running the way we described for now as it will serve as our starting point in the next step. Make sure your input video source is still active.

STEP 9 ..... Turn your Amiga ON and boot it up. Also, place the MODE switch on GEN/ONE in the **COMPUTER** position.

WHAT YOU SHOULD SEE

The composite video output of GEN/ONE will display just the Amiga's image. It will also be genlocked to the input video signal. If you are also using an RGB monitor, it will show the Amiga's image as well.

STEP 10 ..... Flip the MODE switch to the **OVERLAY** position and toggle the KEYING switch between **NORMAL** and **REVERSE.**

WHAT YOU SHOULD SEE

On the composite video monitor, the Amiga's image will now be overlayed over the input video signal. The RGB monitor will only show the Amiga's image. It will do so regardless of the setting of the MODE switch. As you flip the KEYING switch from **NORMAL** to **REVERSE**, the overlay will reverse. More about this in a later section.

STEP 11 ..... Return the switches to the following settings:

POWER: **ON**
SYNC SOURCE: **VIDEO**
MODE: **COMPUTER**
KEYING: **NORMAL**

The Amiga's image will now appear on the output.

Flip the SYNC SOURCE switch to the **COMPUTER** position.

WHAT YOU SHOULD SEE

The composite video output will still show just the Amiga's image but now it is "free-running" and not genlocked to the input video. To prove this, remove the input video signal from the rear panel connector. The image will still be there on the composite monitor.

STEP 12 .....

Reconnect the input video signal. You can now operate GEN/ONE in any of the modes described.

FRONT PANEL SWITCHES

Let's go through the operation of GEN/ONE by explaining and using the controls one by one. You should have GEN/ONE hooked up as described in the installation section.

POWER

You already know what this is for.

MODE

Let's talk about the MODE switch first since the other two switches depend on its setting.

VIDEO

In this position, GEN/ONE simply takes whatever video is present on its video input and buffers it then passes it to the two VIDEO outputs as well as seperates it into its Y (luminance) and C (chrominace) components for the Y and C outputs.

COMPUTER

In this position, GEN/ONE just encodes the RGB from the Amiga and sends it to the outputs on the back of GEN/ONE.

Important

It is in this mode, and only in this mode, that the SYNC SOURCE switch becomes active. We'll talk about the SYNC SOURCE switch in a moment.

OVERLAY

In this position, GEN/ONE overalys or ''keys'' the Amiga's video image over the incoming video's image.

It is in this mode that the KEYING switch becomes active. We'll talk about this switch in a moment.

SYNC SOURCE

First, ***remember that this switch is only active when the MODE switch is in the COMPUTER position.***

The purpose of this switch is to determine what GEN/ONE will sync or "lock" to when we just want to encode the RGB from the Amiga. For example, let's say you don't have an external video source to which to "genlock"; you just want to take the Amiga's output and put it on tape or to a large screen projection TV.

In this case, first set the MODE switch to the **COMPUTER** position. Then, set the SYNC SOURCE switch also to the **COMPUTER** position and GEN/ONE will let the Amiga's video system "free-run" without regard to any external video signal. In turn, GEN/ONE will generate its own sync, blanking, and color burst derived from the Amiga. Even if a video signal is present at the input video connector of GEN/ONE, it will ignore it.

Let's take the second case where the SYNC SOURCE switch is in the **VIDEO** position. Here, the Amiga will now be "genlocked" or synchronized with the video signal present at the video input of GEN/ONE.

Set the SYNC SOURCE switch to the **VIDEO** position and the Amiga will genlock to the incoming video signal. The outputs will just be the encoded RGB from the Amiga but it will now be synchronous or "locked" to the input video signal.

Some operating points about this switch. As you can see, the purpose of this switch is to tell the Amiga whether its video timing should be "genlocked" (SYNC SOURCE switch in the **VIDEO** position) or free run (SYNC SOURCE switch in the **COMPUTER** position).

Remember:
The SYNC SOURCE switch is only active when the MODE switch is in the COMPUTER position.

As you can see from the above descriptions, the Amiga will be genlocked to the input video in any of the following switch settings:

MODE	SYNC SOURCE
COMPUTER	VIDEO
OVERLAY	Don't Care
VIDEO	Don't Care

Important

When in any of the genlock modes and the video signal is lost, the Amiga will temporarily loose its main timing reference.

If this should happen, and no input signal is present to which to genlock, just flip both the SYNC SOURCE and MODE switches to the **COMPUTER** positions.

On the other hand, if the SYNC SOURCE switch is in the **VIDEO** position, the output can be switched from computer-only to overlay to video-only by changing the MODE switch.

KEYING

The KEYING switch is active only when the MODE switch is in the **OVERLAY** position.

In the **NORMAL** position, Color 0 from the Amiga is substituted with the input video signal to which GEN/ONE is locking.

In the **REVERSE** position, Color 0 from the Amiga will appear on the output and all other colors will be substituted with incoming video.

FRONT PANEL CONTROLS

GEN/ONE provides several front panel controls that can either be adjusted once at installation or from time to time at your option. They are included to allow you to match GEN/ONE with the other video equipment in your system. We have provided a small screwdriver to allow you to adjust these multi-turn controls.

INPUT LEVEL

Three (3) 15-turn trimmer adjustments are provided on the front panel, one each for **RED**, **GREEN**, and **BLUE**. These controls adjust the level of the red, green, and blue (RGB) signals coming from the Amiga. The levels can be independently adjusted from zero to unity gain.

The purpose of these controls is twofold. First, they can be adjusted to achieve proper color balance between the colors. With the aid of a vectorscope, a known white signal image from the Amiga can be made "white" by adjusting these RGB gain controls for minimum chroma subcarrier on the composite video output. (Technically speaking, white is not a color.)

The second use for these controls is to give you the capability of intentionally "tinting" the composite video output so that it appears to favor one color or hue. Maybe for some artistic reason you want everything to appear a little more magenta in color. Just turn down the **GREEN** level control so that the levels of **RED** and **BLUE** (which makeup magenta) are relatively higher compared to green.

These controls are set at the factory for proper color balance. Caution is urged when experimenting with these controls, without a vectorscope, so that you don't get things too far out of whack to the point where you can't get the color back in balance.

Please note that the adjustment of these controls will effect the color balance on the rear panel MONITOR output as well.

OUTPUT LEVEL

GEN/ONE has three different output types. There is a standard NTSC composite video output available on two connectors on the rear panel. There are also seperate **Y** (luminance) and **C** (chrominance) outputs which together comprise the S-VHS compatible Y/C output.

The front panel OUTPUT LEVEL 15-turn controls for **VIDEO, Y,** and **C** provide independent adjustment of the output levels from zero to slightly more than unity gain.

SYSTEM TIMING

These three controls adjust the Horizontal (H), Vertical (V), and Subcarrier (SC) timing of the encoded Amiga signal.

The **H, V,** and **SC** controls are only active when GEN/ONE is in one of the genlocked modes described earlier.

The **H** and **V** controls will adjust when the horizontal and vertical sync signals coming from the Amiga will start with respect to the sync of the incoming video signal to which GEN/ONE is genlocking. This is important to achieve accurate registration in the **OVERLAY** mode of the Amiga's image over the incoming video.

The **SC** control will adjust the overall phase of the color subcarrier portion of the Amiga's encoded signal with respect to the burst of the incoming video.

REAR PANEL INPUTS

VIDEO

The VIDEO input is where a standard NTSC composite video signal is connected to which the Amiga will genlock. This will also be the video signal over which an Amiga generated image will be overlayed.

LOOP

This is a parallel connection of the VIDEO input and can be used to send the input video signal on to other equipment in the system.

75 Ohm / LOOP SWITCH

This switch will terminate the input video in 75 ohms which is standard. If the LOOP connector is used to pass the video signal on to other video equipment, then place this switch in the **LOOP** position.

COMPUTER

This port connects to the Amiga's VIDEO port using the cable supplied with GEN/ONE. ***This interconnecting cable must be kept short due to the high speed 28 MHz clock that is sent to the Amiga from GEN/ONE.*** Do not use a cable extender to lengthen the cable supplied with GEN/ONE. Doing so, will cause the Amiga not to boot or may cause erratic operation of the Amiga.

The pinout of this connector is given in Appendix A.

REAR PANEL OUTPUTS

VIDEO

Two independently buffered composite video outputs are provided by GEN/ONE. These outputs will nominally produce a 1 Vp-p signal (from sync tip to peak white) when terminated in 75 ohms. This level can be adjusted by the front panel **VIDEO** control.

KEY

This is a buffered output from the color 0, or overlay, bit from the Amiga. It is TTL compatible in level or can be terminated in 75 ohms. It is always active regardless of the setting of the front panel MODE switch. It's polarity will reverse with the setting of the front panel KEYING switch.

This output can be used in conjunction with external special effects generators.

Y

This is the luminance only output of whatever you have selected to appear on the composite VIDEO output. It has a nominal level of 1 Vp-p when terminated in 75 ohms. It's level can be adjusted by the front panel **Y** control.

SC

This is the chrominance only output of whatever you have selected to appear on the composite VIDEO output. It has nominally the same levels of the chrominance portion of the VIDEO output when terminated in 75 ohms. It's level can be adjusted by the front panel **C** control.

MONITOR

This is the buffered analog RGB and composite sync output from the Amiga intended for hookup to an analog RGB monitor. It will only display the Amiga's image and not the incoming video nor an overlay of the two. It is always active regardless of the setting of the MODE switch.

The analog RGB outputs on this connector are intended to be terminated in 75 ohms and their level will be effected by the setting of the front panel INPUT LEVEL controls.

The pinouts for this connector are given in Appendix B.

We recommended you use the short jumper cable provided with GEN/ONE to convert this 9-pin connector to the same 23-pin connector type that your RGB monitor previously connected to on the back of your Amiga.

Important

The pinout of this connector is not compatible with the DB-9 to circular DIN cable assembly supplied with the Amiga 1084 monitor. That cable assembly is intended to connect an IBM PC to the TTL RGB input on the 1084.

DOs AND DON'Ts

DO ..... make sure you have a video signal going into GEN/ONE whenever you are in any of the genlock modes. Without a proper video signal to which to lock, the Amiga will not have a timing reference.

DO ..... make sure GEN/ONE is powered ON whenever it is connected to the Amiga and the Amiga is ON, *even if you don't want to genlock.* When GEN/ONE is connected to the Amiga, the Amiga expects to see the master 28MHz clock to come from GEN/ONE. This can only happen if GEN/ONE is powered ON.

DO ..... realize that the quality of the picture you will see on the composite monitor will not look as sharp as the same image on the RGB monitor. This is because whenever you encode from the Amiga into a composite video signal distortions will occur. Also, the TVs, VCRs, and composite monitors, even Y/C equipment, does not have the same bandwidth as an RGB monitor. It is this additional bandwidth that is necessary to show all the fine detail. Also, the encoding of RGB into composite video or Y/C will add certain artifacts to the color portion of the signal.

DON'T ..... lengthen the cable connecting the Amiga to the GEN/ONE. This cable carries the 28MHz clock as well as other timing signals. If it is lengthen by adding an extension cable or substituting a cable of longer length, the additional cable capacitance will cause the clock signal to become too weak to properly drive the Amiga. The Amiga will then exhibit erratic operation and may not boot at all.

DON'T ..... assume that because an RGB monitor cable mechanically will connect from the MONITOR connector on GEN/ONE to your RGB monitor that it is wired correctly. Just because it fits dosen't mean it is wired correctly. The pinout for the GEN/ONE's MONITOR connector is given in Appendix B of this manual. Compare it to the equipment your connecting up to if you are making your own cable.

DON'T ..... operate GEN/ONE along with any other genlock, such as the Amiga A2300, at the same time. The Amiga was designed to handle only <u>one</u> genlock at a time.

TAKING OFF THE TOP COVER

Although there are no user adjustments inside GEN/ONE, if you must take the cover off please note the following.

To take the top cover off, *remove the four (4) screws that hold the rubber feet to the cover*. These screws are located inside the feet. Once the feet are off, just slide the cover off.

DO NOT remove the four screws attached to the bottom panel. These will loosen the front and rear panels and may cause nuts and washers to rattle around loose inside the unit. And we all know what will happen then.

OPTIONAL CABLE ASSEMBLIES

Communications Specialties offers several interface cables for integrating GEN/ONE into your video system. These cables are available from your dealer or from Communications Specialties.

In addition to the cables listed here, we would like to know what other cables you may feel are needed.

Part #	Input	Output	Length	Where Used
CAB-1	DB-9 male	4 BNC plugs	4 feet	MONITOR Output
CAB-4	BNC plug	RCA plug	6 feet	VIDEO Input or Output
CAB-10	2 BNC plugs	4-pin Mini DIN plug	6 feet	Y/C Output to S-VHS Input
CAB-12	BNC plug	BNC plug	6 feet	Any BNC Input or Output

TROUBLESHOOTING

GEN/ONE is not your average genlock. With all the switches and controls it's easy to get trapped into some strange mode. If you find things aren't working as they should, here are some tips to try.

GET BACK TO BASICS

Most of you will integrate GEN/ONE into a more complex video system. It's important when troubleshooting a problem you believe associated with GEN/ONE that you hookup all inputs and outputs directly to GEN/ONE.

Important

Do not go through any external equipment like VCRs, switchers, processing amplifiers and TBCs when trying to determine the source of the problem. This will eliminate these connections as a possible source of the problem and allow you to look at GEN/ONE as simply as possible.

IS THE INPUT GOING OUT?

Hook up a known video source, such as a color camera, to the input of GEN/ONE and place the MODE switch in the **VIDEO** position. Does this video source appear on the composite video output? If not, check all the connections as well as the power transformer.

HOW ABOUT THE AMIGA?

Put the MODE switch and the SYNC SOURCE switch in the **COMPUTER** position. Remove all discs from the Amiga. Turn the Amiga ON. You should see the Workbench requestor screen on the composite video output and RGB monitor outputs of GEN/ONE. If not, make sure the cable is connected from the Amiga to GEN/ONE. Also, make sure that you are using only the cable supplied with GEN/ONE to connect it to the Amiga.

TROUBLES WITH THE RGB MONITOR

By far the most common problem associated with the RGB MONITOR output of GEN/ONE is that the wrong cable is used. The DB-9 cable supplied with the 1084 monitor will not work with GEN/ONE even though it "fits". The MONITOR output is also wired differently then most other genlocks so don't use one of their cables either.

Important

The current version of GEN/ONE is supplied with a short jumper cable to interface the RGB MONITOR output of GEN/ONE with your existng RGB monitor.

WHY DOES THE OUTPUT LOOK "NOISY" WHEN I LOCK TO A VCR?

When you genlock to a VCR that is not time based corrected, any genlock will have a hard time trying to "follow" the errors in the sync and color burst signals coming off the tape. This is true of any VCR, even the 1-inch broadcast machines. That is why there are time base correctors (TBCs). GEN/ONE will lock to a non-time based corrected VCR but the resulting Amiga image will exhibit a very slight horizontal jitter. The colors, particularly magentas and reds, might show broad horizontal streaks in them and appear to be generally "noisy". This is because GEN/ONE is trying to lock to a video signal which is inherently unstable. To demonstrate this, substitute a color camera for the VCR which is a stable video source.

TECHNICAL SUPPORT

When all else fails, ask your dealer for help. You can also contact us by phone, FAX, or letter. We are here to help. We have a lot of experience with different types of video systems and can help with system integration problems. Your dealer is also a good person to contact as he has had much experience with the Amiga.

Our phone number is (516) 273-0404 Monday to Friday 9 to 5 Eastern Time. Our FAX number is (516) 273-1638.

IF YOU RETURN YOUR GEN/ONE TO US FOR REPAIR

We can't read minds. You would be surprised how often we get equipment back for repair and find nothing is wrong. The real problem is that we don't know what problem you, the user, were experiencing that prompted the return in the first place.

The problem may be in your system interfacing or it may be some intermittent problem inside GEN/ONE itself. But it's imperative ***that you tell us what problem you are experiencing*** so that we can dig for the problem if it isn't obvious. If you can, we would appreciate a VHS tape showing the problem if its a subtle one.

Also, please include a daytime phone number where we can contact you in case we have any questions. Especially if you are returning GEN/ONE through your dealer.

Remenber, we want to solve your problem but we need some help.

APPENDIX A

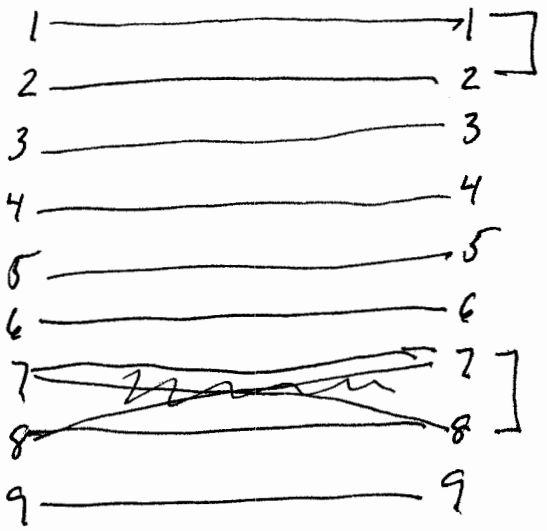
Pinout for COMPUTER Input

PIN	FUNCTION
1	28 MHz Master Clock
2	Ground
3	Composite Sync, TTL
4	Horizontal Sync, TTL
5	Vertical Sync, TTL
6	3.58 MHz Subcarrier
7	Zero Detect, TTL
8	N/C
9	N/C
10	RED, Analog
11	GREEN, Analog
12	BLUE, Analog
13 - 25	Ground

APPENDIX B

Pinout for MONITOR Output

PIN	FUNCTION
1	Ground
2	N/C
3	Buffered RED, Analog
4	Buffered GREEN, Analog
5	Buffered BLUE, Analog
6	N/C
7	N/C
8	Composite Sync, TTL
9	Vertical Sync, TTL



Symetrical Adapter for Standard DB9 cable + A1070 Monitor

STATEMENT OF LIMITED WARRANTY

There are no warranties, expressed or implied, except as expressly set forth herein.

Communications Specialties, Inc. (CSI) warrants that for a period of one (1) year after purchase by the Buyer, GEN/ONE manufactured by CSI will be free from defects in material and workmanship under normal use and service. The Buyer shall give prompt written notice of any claims of defect in materials and workmanship.

A Return Material Authorization (RMA) number must be obtained from CSI before any equipment is returned by the Buyer. All returned material must be shipped to CSI, Hauppauge, New York, at the expense and at the risk of the Buyer. Units returned to the Buyer will be shipped freight collect.

CSI's obligation under this warranty will be limited, at its option, to either repair or replacement of defective units, including free materials and labor, at its customer service facility in Hauppauge, New York. In no event shall CSI be liable for any incidental or consequential damages or loss of profits or goodwill.

CSI shall not be obligated to replace or repair equipment that has been damaged by fire, war, acts of God, or other similar causes, or equipment that has been serviced, altered, or improperly installed, or has been abused or has defaced serial numbers.

RMA numbers and repairs can be obtained from:

Communications Specialties, Inc.
89A Cabot Court
Hauppauge, New York 11788

Tel: (516) 273-0404
Fax: (516) 273-1638